

United States Department of Agriculture Natural Resources Conservation Service

Ecological Site Description

Site Type: Rangeland

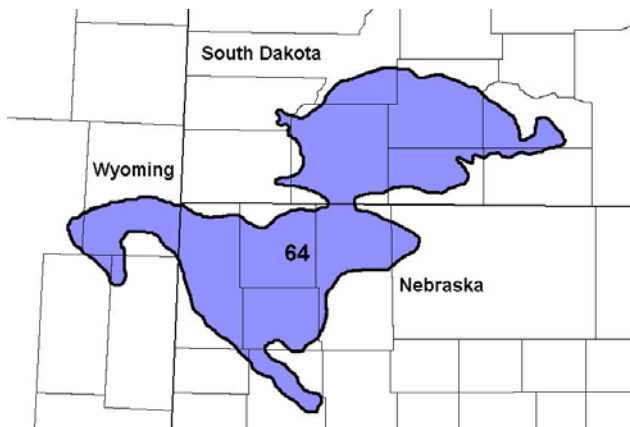
Site Name: Sands

Site ID: R064XY012NE

Major Land Resource Area:
64 – Mixed Sandy and Silty Tableland

Physiographic Features

This site typically occurs on gently to more steeply sloping rolling dunes.



Landform: dune, hill

Aspect: N/A

	<u>Minimum</u>	<u>Maximum</u>
Elevation (feet):	2900	4000
Slope (percent):	3	30
Water Table Depth (inches):	None	None
Flooding:		
Frequency:	None	None
Duration:	None	None
Ponding:		
Depth (inches):	None	None
Frequency:	None	None
Duration:	None	None
Runoff Class:	Negligible	Low

Climatic Features

MLRA 64 is considered to have a continental climate – cold winters and hot summers, low humidity, light rainfall, and much sunshine. Extremes in temperature may also abound. The climate is the result of this MLRA's location near the geographic center of North America. There are few natural barriers on the northern Great Plains and the winds move freely across the plains and account for rapid changes in temperature.

Annual precipitation ranges from 14 to 20 inches per year. The normal average annual temperature is about 47° F. January is the coldest month with average temperatures ranging from about 21° F (Wood, SD) to about 25° F (Hemingford, NE). July is the warmest month with temperatures averaging from about 70° F (Keeline 3 W, WY) to about 76° F (Wood, SD). The range of normal average monthly temperatures between the coldest and warmest months is about 55° F. This large annual range attests to the continental nature of this area's climate. Hourly winds average about 11 miles per hour annually, ranging from about 13 miles per hour during the spring to about 10 miles per hour during the summer. Daytime winds are generally stronger than nighttime and occasional strong storms may bring brief periods of high winds with gusts to more than 50 miles per hour.

Growth of native cool season plants begins mid to late March and continues to late June. Native warm season plants begin growth in early May and continue to late August. Green up of cool season plants may occur in September and October when adequate soil moisture is present.

	<u>Minimum</u>	<u>Maximum</u>
Frost-free period (days):	138	143
Freeze-free period (days):	161	163
Mean Annual Precipitation (inches):	14	20

Average Monthly Precipitation (inches) and Temperature (°F):

	Precip. Min.	Precip. Max	Temp. Min.	Temp. Max.
January	0.42	0.52	9.0	35.8
February	0.48	0.61	14.6	40.7
March	0.90	1.22	21.0	47.5
April	1.83	2.15	28.9	61.3
May	2.22	3.38	38.3	72.2
June	2.05	3.27	47.3	82.1
July	1.63	2.73	53.9	90.1
August	1.09	1.96	52.3	89.3
September	1.09	1.58	42.4	79.5
October	0.80	1.38	32.6	66.6
November	0.56	0.65	20.4	49.0
December	0.42	0.50	13.4	38.4

Climate Stations		Period	
Station ID	Location or Name	From	To
NE3755	Hemingford, NE	1964	1999
WY5085	Keeline 3 W, WY	1953	1986
SD9442	Wood, SD	1948	1999

For local climate stations that may be more representative, refer to <http://www.wcc.nrcs.usda.gov>.

Influencing Water Features

No significant water features influence this site.

Representative Soil Features

The features common to all soils in this site are the loamy fine sand to sand textured surfaces and slopes of 3 to 30 percent. The soils in this site are somewhat excessively to excessively drained and formed in eolian sand or sandy alluvium. The surface layer is 3 to 18 inches thick. The texture of the subsurface soils range from loamy fine sand to sand. This site should show slight to no evidence of rills, wind scoured areas or pedestalled plants. Water flow paths are broken, irregular in appearance or discontinuous with numerous vegetative barriers. The soil surface is stable and intact.

These soils are susceptible to wind and water erosion. The hazard of water erosion increases on slopes greater than about 15 percent. Loss of 50 percent or more of the surface layer of the soils on this site can result in a shift in species composition and/or production.

More information can be found in the various soil survey reports. Contact the local USDA Service Center for soil survey reports that include more detail specific to your location.

Site Type: Rangeland
MLRA: 64 – Mixed Sandy and Silty Tableland

Sands
R064XY012NE

Parent Material Kind: eolian deposits, alluvium
Parent Material Origin: mixed
Surface Texture: loamy fine sand, fine sand, sand
Surface Texture Modifier: none
Subsurface Texture Group: sandy
Surface Fragments $\leq 3''$ (% Cover): 0
Surface Fragments $> 3''$ (%Cover): 0
Subsurface Fragments $\leq 3''$ (% Volume): 0
Subsurface Fragments $> 3''$ (% Volume): 0

	<u>Minimum</u>	<u>Maximum</u>
Drainage Class:	somewhat excessively	excessively
Permeability Class:	rapid	very rapid
Depth (inches):	>72	>72
Electrical Conductivity (mmhos/cm)*:	0	2
Sodium Absorption Ratio*:	0	0
Soil Reaction (1:1 Water)*:	5.6	8.4
Soil Reaction (0.1M CaCl₂)*:	NA	NA
Available Water Capacity (inches)*:	3	4
Calcium Carbonate Equivalent (percent)*:	0	10

* - These attributes represent from 0-40 inches or to the first restrictive layer.

Plant Communities

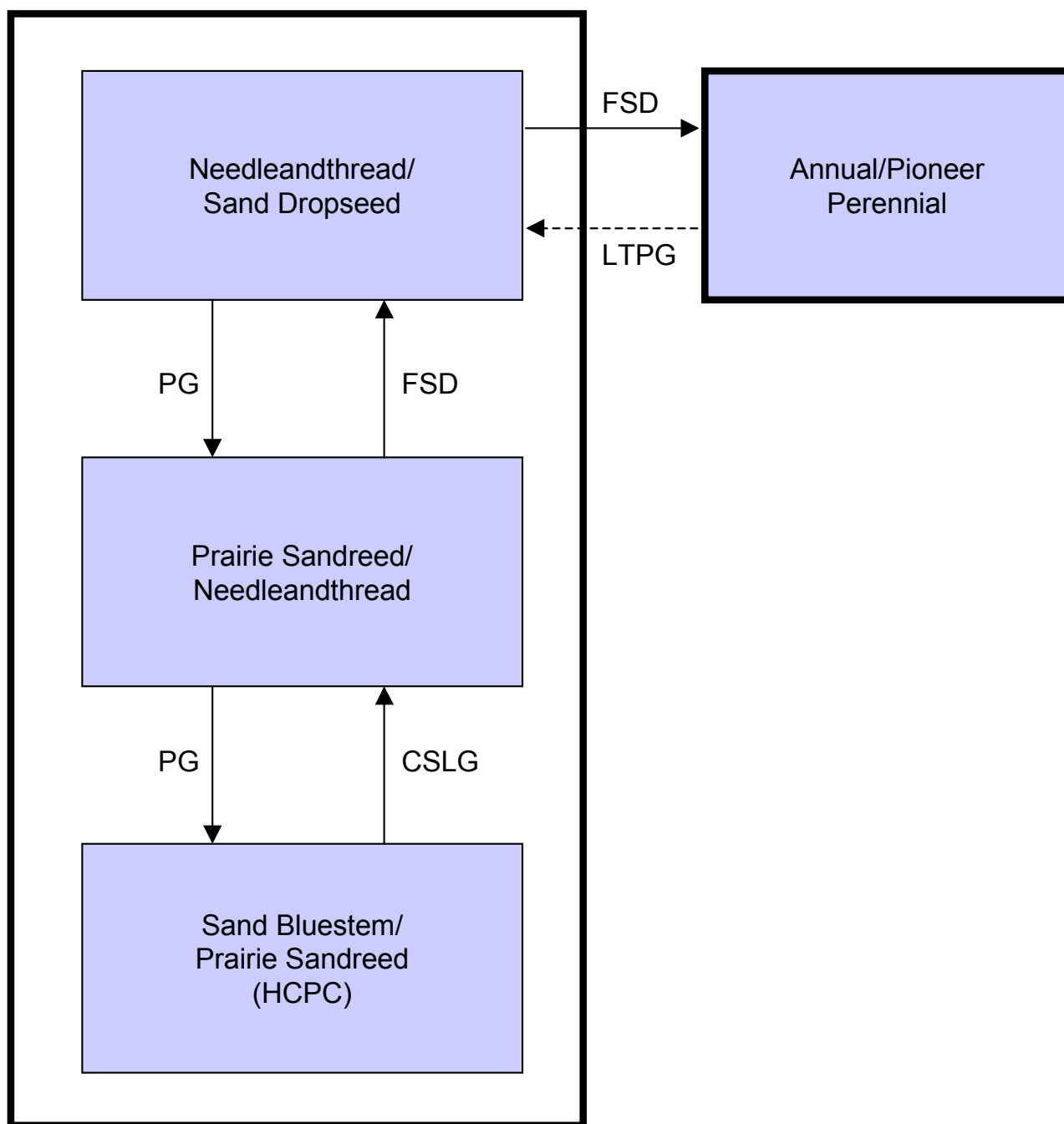
Ecological Dynamics of the Site:

The site developed under Northern Great Plains climatic conditions, including natural influences of large herbivores and occasional fire. Changes will occur in the plant communities due to climatic conditions, grazing management and fire. Under adverse impacts, species such as sand dropseed and blue grama will increase, while sand bluestem and little bluestem will decrease. Under favorable vegetative management treatments the site can return to the Historic Climax Plant Community (HCPC). Sand sagebrush occurs primarily in the western portion of this MLRA.

The plant community upon which interpretations are primarily based is the Historic Climax Plant Community. The HCPC has been determined by study of rangeland relic areas, areas protected from excessive disturbance, and areas under long-term rotational grazing regimes. Trends in plant community dynamics ranging from heavily grazed to lightly grazed areas, seasonal use pastures, and historical accounts also have been used. Subclimax plant communities, states, transitional pathways, and thresholds have been determined through similar studies and experience.

The following diagram illustrates the common plant communities and vegetation states commonly occurring on the site and the transition pathways between communities and states. The ecological processes will be discussed in more detail in the plant community descriptions following the diagram.

Plant Communities and Transitional Pathways



CSLG - Continuous season-long grazing; **FSD** - Frequent and severe defoliation;
HCPC - Historic Climax Plant Community; **LTPG** - Long-term prescribed grazing;
PG - Prescribed grazing.

Plant Community Composition and Group Annual Production

			Sand Bluestem/Prairie Sandreed (HCPC)		
COMMON/GROUP NAME	SCIENTIFIC NAME	SYMBOL	Group	lbs./acre	% Comp
GRASSES & GRASS-LIKES				1615 - 1805	85 - 95
sand bluestem	Andropogon hallii	ANHA	1	285 - 475	15 - 25
prairie sandreed	Calamovilfa longifolia	CALO	2	285 - 760	15 - 40
little bluestem	Schizachyrium scoparium	SCSC	3	0 - 285	0 - 15
needleandthread	Hesperostipa comata ssp. comata	HECOC8	4	95 - 190	5 - 10
SHORT WARM-SEASON GRASSES			5	38 - 190	2 - 10
blue grama	Bouteloua gracilis	BOGR2	5	19 - 190	1 - 10
hairy grama	Bouteloua hirsuta	BOHI2	5	19 - 95	1 - 5
OTHER NATIVE GRASSES AND GRASS-LIKES			6	95 - 285	5 - 15
switchgrass	Panicum virgatum	PAVI2	6	0 - 95	0 - 5
sand dropseed	Sporobolus cryptandrus	SPCR	6	0 - 190	0 - 10
Indian ricegrass	Achnatherum hymenoides	ACHY	6	0 - 38	0 - 2
threeawn	Aristida spp.	ARIST	6	0 - 95	0 - 5
sand lovegrass	Eragrostis trichodes	ERTR3	6	0 - 38	0 - 2
sand paspalum	Paspalum setaceum	PASE5	6	0 - 19	0 - 1
Scribner panicum	Dichanthelium oligosanthes var. scribnerianum	DIOL5	6	0 - 38	0 - 2
Sandhill muhly	Muhlenbergia pungens	MUPU2	6	0 - 95	0 - 5
sedge	Carex spp.	CAREX	6	19 - 190	1 - 10
FORBS			8	38 - 190	2 - 10
annual sunflower	Helianthus annuus	HEAN3	8	0 - 19	0 - 1
cudweed sagewort	Artemisia ludoviciana	ARLU	8	0 - 19	0 - 1
cutleaf ironplant	Machaeranthera pinnatifida	MAPI	8	0 - 19	0 - 1
false boneset	Brickellia eupatorioides	BREU	8	0 - 19	0 - 1
gayfeather	Liatris spp.	LIATR	8	0 - 19	0 - 1
goldenrod	Solidago spp.	SOLID	8	0 - 19	0 - 1
green sagewort	Artemisia dracuncululus	ARDR4	8	0 - 19	0 - 1
heath aster	Symphyotrichum ericoides	SYER	8	0 - 19	0 - 1
penstemon	Penstemon spp.	PENST	8	0 - 19	0 - 1
scurfpea	Psoraleum spp.	PSORA2	8	0 - 19	0 - 1
spiderwort	Tradescantia spp.	TRADE	8	0 - 19	0 - 1
tenpetal blazingstar	Mentzelia decapetala	MEDE2	8	0 - 19	0 - 1
thistle	Cirsium spp.	CIRSI	8	0 - 19	0 - 1
western ragweed	Ambrosia psilostachya	AMPS	8	0 - 19	0 - 1
other perennial forbs		2FP	8	0 - 38	0 - 2
SHRUBS			9	19 - 95	1 - 5
cactus	Opuntia spp.	OPUNT	9	0 - 19	0 - 1
fringed sagewort	Artemisia frigida	ARFR4	9	0 - 19	0 - 1
leadplant	Amorpha canescens	AMCA6	9	0 - 19	0 - 1
poison ivy	Toxicodendron rydbergii	TORY	9	0 - 19	0 - 1
rose	Rosa spp.	ROSA5	9	0 - 19	0 - 1
sand sagebrush	Artemisia filifolia	ARFI2	9	0 - 19	0 - 1
sandcherry	Prunus pumila	PRPU3	9	0 - 19	0 - 1
small soapweed	Yucca glauca	YUGL	9	0 - 19	0 - 1
Annual Production lbs./acre				LOW	RV
GRASSES & GRASS-LIKES				1450 -	1729 -2205
FORBS				35 -	114 -195
SHRUBS				15 -	57 -100
TOTAL				1500 -	1900 -2500

This list of plants and their relative proportions are based on near normal years. Fluctuations in species composition and relative production may change from year to year dependent upon precipitation or other climatic factors. RV = Representative value.

Plant Community Composition and Group Annual Production

		Sand Bluestem/Prairie Sandreed (HCPC)			Prairie Sandreed/Needleandthread			Needleandthread/Sand Dropseed			Annual/Pioneer Perennial			
COMMON/GROUP NAME	SYMBOL	Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp	
GRASSES & GRASS-LIKES			1615 - 1805	85 - 95		1120 - 1260	80 - 90		675 - 765	75 - 85		325 - 375	65 - 75	
sand bluestem	ANHA	1	285 - 475	15 - 25	1	14 - 140	1 - 10	1			1			
prairie sandreed	CALO	2	285 - 760	15 - 40	2	210 - 420	15 - 30	2	0 - 90	0 - 10	2	0 - 50	0 - 10	
little bluestem	SCSC	3	0 - 285	0 - 15	3	0 - 70	0 - 5	3			3			
needleandthread	HECOC8	4	95 - 190	5 - 10	4	70 - 210	5 - 15	4	90 - 180	10 - 20	4	50 - 100	10 - 20	
SHORT WARM-SEASON		5	38 - 190	2 - 10	5	70 - 210	5 - 15	5	90 - 270	10 - 30	5	50 - 150	10 - 30	
blue grama	BOGR2	5	19 - 190	1 - 10	5	14 - 210	1 - 15	5	90 - 270	10 - 30	5	50 - 150	10 - 30	
hairy grama	BOHI2	5	19 - 95	1 - 5	5	14 - 70	1 - 5	5	0 - 45	0 - 5	5	0 - 25	0 - 5	
OTHER NATIVE		6	95 - 285	5 - 15	6	70 - 210	5 - 15	6	45 - 180	5 - 20	6	25 - 100	5 - 20	
switchgrass	PAVI2	6	0 - 95	0 - 5	6	0 - 28	0 - 2							
sand dropseed	SPCR	6	0 - 190	0 - 10	6	14 - 140	1 - 10	6	9 - 135	1 - 15	6	5 - 75	1 - 15	
Indian ricegrass	ACHY	6	0 - 38	0 - 2	6	0 - 14	0 - 1							
threawn	ARIST	6	0 - 95	0 - 5	6	0 - 70	0 - 5	6	0 - 45	0 - 5	6	0 - 25	0 - 5	
sand lovegrass	ERTR3	6	0 - 38	0 - 2	6	0 - 14	0 - 1							
sand paspalum	PASE5	6	0 - 19	0 - 1	6	0 - 14	0 - 1							
Scribner panicum	DIOLS	6	0 - 38	0 - 2	6	0 - 28	0 - 2							
sandhill muhly	MUPU2	6	0 - 95	0 - 5	6	0 - 70	0 - 5							
sedge	CAREX	6	19 - 190	1 - 10	6	14 - 140	1 - 10	6	45 - 90	5 - 10	6	25 - 50	5 - 10	
NON-NATIVE		7			7	0 - 70	0 - 5	7	0 - 45	0 - 5	7	0 - 50	0 - 10	
cheatgrass	BRTE	7			7	0 - 70	0 - 5	7	0 - 45	0 - 5	7	0 - 50	0 - 10	
FORBS		8	38 - 190	2 - 10	8	28 - 140	2 - 10	8	45 - 90	5 - 10	8	25 - 100	5 - 20	
annual eriogonum	ERAN4							8	0 - 18	0 - 2	8	0 - 15	0 - 3	
annual sunflower	HEAN3	8	0 - 19	0 - 1	8	0 - 14	0 - 1	8	0 - 18	0 - 2	8	0 - 75	0 - 15	
cudweed sagewort	ARLU	8	0 - 19	0 - 1	8	0 - 14	0 - 1	8	0 - 9	0 - 1	8	0 - 25	0 - 5	
cutleaf ironplant	MAPI	8	0 - 19	0 - 1	8	0 - 14	0 - 1	8	0 - 9	0 - 1	8	0 - 5	0 - 1	
false boneset	BREU	8	0 - 19	0 - 1	8	0 - 14	0 - 1	8	0 - 9	0 - 1	8	0 - 5	0 - 1	
gayfeather	LIATR	8	0 - 19	0 - 1	8	0 - 14	0 - 1	8	0 - 9	0 - 1	8	0 - 5	0 - 1	
goldenrod	SOLID	8	0 - 19	0 - 1	8	0 - 14	0 - 1	8	0 - 9	0 - 1	8	0 - 5	0 - 1	
green sagewort	ARDR4	8	0 - 19	0 - 1	8	0 - 14	0 - 1	8	0 - 9	0 - 1	8	0 - 5	0 - 1	
heath aster	SYER	8	0 - 19	0 - 1	8	0 - 14	0 - 1	8	0 - 9	0 - 1	8	0 - 5	0 - 1	
penstemon	PENST	8	0 - 19	0 - 1	8	0 - 14	0 - 1	8	0 - 9	0 - 1	8	0 - 5	0 - 1	
scurfpea	PSORA2	8	0 - 19	0 - 1	8	0 - 14	0 - 1	8	0 - 18	0 - 2	8	0 - 5	0 - 1	
spiderwort	TRADE	8	0 - 19	0 - 1	8	0 - 14	0 - 1	8	0 - 9	0 - 1	8	0 - 5	0 - 1	
tenpetal blazingstar	MEDE2	8	0 - 19	0 - 1	8	0 - 14	0 - 1	8	0 - 9	0 - 1	8	0 - 5	0 - 1	
thistle	CIRSI	8	0 - 19	0 - 1	8	0 - 14	0 - 1	8	0 - 9	0 - 1	8	0 - 5	0 - 1	
western ragweed	AMPS	8	0 - 19	0 - 1	8	0 - 14	0 - 1	8	0 - 18	0 - 2	8	0 - 50	0 - 10	
other perennial forbs	2FP	8	0 - 38	0 - 2	8	0 - 28	0 - 2	8	0 - 18	0 - 2	8	0 - 10	0 - 2	
SHRUBS		9	19 - 95	1 - 5	9	28 - 140	2 - 10	9	27 - 135	3 - 15	9	25 - 75	5 - 15	
cactus	OPUNT	9	0 - 19	0 - 1	9	0 - 28	0 - 2	9	0 - 45	0 - 5	9	0 - 25	0 - 5	
fringed sagewort	ARFR4	9	0 - 19	0 - 1	9	0 - 28	0 - 2	9	0 - 45	0 - 5	9	0 - 25	0 - 5	
leadplant	AMCA6	9	0 - 19	0 - 1	9	0 - 14	0 - 1	9	0 - 9	0 - 1				
poison ivy	TORY	9	0 - 19	0 - 1	9	0 - 14	0 - 1	9	0 - 9	0 - 1	9	0 - 5	0 - 1	
rose	ROSA5	9	0 - 19	0 - 1	9	0 - 14	0 - 1				9	0 - 5	0 - 1	
sand sagebrush	ARFI2	9	0 - 19	0 - 1	9	0 - 70	0 - 5	9	0 - 90	0 - 10	9	0 - 50	0 - 10	
sandcherry	PRPU3	9	0 - 19	0 - 1	9	0 - 14	0 - 1	9	0 - 9	0 - 1				
small soapweed	YUGL	9	0 - 19	0 - 1	9	0 - 28	0 - 2	9	0 - 45	0 - 5	9	0 - 25	0 - 5	
Annual Production lbs./acre			LOW	RV	HIGH	LOW	RV	HIGH	LOW	RV	HIGH	LOW	RV	HIGH
GRASSES & GRASS-LIKES			1450 - 1729 - 2205			750 - 1232 - 1410			535 - 752 - 965			260 - 388 - 515		
FORBS			35 - 114 - 195			25 - 84 - 145			40 - 68 - 95			20 - 63 - 105		
SHRUBS			15 - 57 - 100			25 - 84 - 145			25 - 81 - 140			20 - 50 - 80		
TOTAL			1500 - 1900 - 2500			800 - 1400 - 1700			600 - 900 - 1200			300 - 500 - 700		

This list of plants and their relative proportions are based on near normal years. Fluctuations in species composition and relative production may change from year to year dependent upon precipitation or other climatic factors. RV = Representative value.

Plant Community and Vegetation State Narratives

Following are the narratives for each of the described plant communities. These plant communities may not represent every possibility, but they are the most prevalent and repeatable plant communities. The plant composition tables shown above have been developed from the best available knowledge at the time of this revision. As more data are collected, some of these plant communities may be revised or removed, and new ones may be added. None of these plant communities should necessarily be thought of as “Desired Plant Communities”. According to the USDA NRCS National Range and Pasture Handbook, Desired Plant Communities (DPC’s) will be determined by the decision-makers and will meet minimum quality criteria established by the NRCS. The main purpose for including any description of a plant community here is to capture the current knowledge and experience at the time of this revision.

Sand Bluestem/Prairie Sandreed Plant Community

This is the interpretive plant community and is considered to be the Historic Climax Plant Community (HCPC). This site evolved with grazing by large herbivores and is well suited for grazing by domestic livestock. This site can be found on areas that are properly managed with grazing and/or prescribed burning, and on areas receiving occasional short periods of rest.

The potential vegetation is about 85% grasses or grass-like, 10% forbs, and 5% shrubs. The site is dominated by tall and mid-grasses. The major grasses include sand bluestem, prairie sandreed, little bluestem and needleandthread. Other species occurring on the site include sand dropseed, hairy grama, blue grama, switchgrass and sedge. Forbs and shrubs such as penstemon, gayfeather, rose, leadplant, and sand sagebrush are significant.

This plant community is well adapted to the Northern Great Plains climatic conditions. Community dynamics, nutrient cycle, water cycle and energy flow are functioning at the sites potential. Plant litter is properly distributed with some movement off-site and natural plant mortality is low. The high plant diversity allows for high drought tolerance.

The following growth curve shows the estimated monthly percentages of total annual growth of the dominant species expected during a normal year:

Growth curve number: NE6405

Growth curve name: Pine Ridge/Badlands, warm-season dominant.

Growth curve description: Warm-season dominant.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	3	7	15	20	30	15	5	5	0	0

Transitions or pathways leading to other plant communities are as follows:

- Continuous season-long grazing will convert the plant community to the *Prairie Sandreed/Needleandthread Plant Community*.

Prairie Sandreed/Needleandthread Plant Community

This plant community typically develops under continuous season-long grazing. The plant community has a reduced component of mid-grasses with an understory of short sod-forming grasses. Dominant grasses include prairie sandreed, needleandthread, hairy grama and blue grama. Other species may include sand dropseed, and sedge. Forbs commonly found in this plant community include dotted gayfeather, cudweed sagewort, scurfpeas, and western ragweed. Shrubs in the community include small soapweed, sand sagebrush, cactus, and rose.

Compared to the HCPC hairy grama, blue grama, sand dropseed, and annual forbs have increased. Sand bluestem and little bluestem have decreased. Plant diversity remains high, despite the decrease in sand bluestem and little bluestem. This plant community is not resistant to change. Changes in grazing management can result in a shift to another plant community. This community is fairly resilient following normal disturbances because of the high diversity of plant species and the high amount of litter. Soil erosion is low. The water cycle is functioning due to the litter cover on the soil surface. Infiltration is high because of the soil texture and surface litter.

The following growth curve shows the estimated monthly percentages of total annual growth of the dominant species expected during a normal year:

Growth curve number: NE6404

Growth curve name: Pine Ridge/Badlands, warm-season dominant, cool-season sub-dominant.

Growth curve description: Warm-season dominant, cool-season sub-dominant.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	8	15	24	23	15	5	5	0	0

Transitions or pathways leading to other plant communities are as follows:

- Prescribed grazing will convert this plant community to the *Sand Bluestem/Prairie Sandreed Plant Community*.
- Frequent and severe defoliation throughout the growing season will move this plant community to the *Needleandthread/Sand Dropseed Plant Community*.

Needleandthread/Sand Dropseed Plant Community

This plant community typically develops over a period of several years, under frequent and severe defoliation during the warm-season grass growing period. The dominant grasses are needleandthread, sand dropseed, hairy grama and blue grama. Significant forbs include western ragweed, annual sunflower, tenpetal mentzelia, and annual eriogonum. Dominant shrubs in this community include sand sagebrush, small soapweed and cactus.

Compared to the HCPC, sand dropseed, sandhill muhly, blue grama, and hairy grama have greatly increased. Needleandthread and prairie sandreed are limited to areas in the sagebrush. Sand bluestem and little bluestem are absent. Desirable plant species have decreased.

This plant community is not resistant to change due to the higher percentage of bare ground and increased sand sagebrush component. The water cycle is impaired due to a reduction in litter and the potential for higher runoff and decreased infiltration. The risk for soil erosion increases.

The following growth curve shows the estimated monthly percentages of total annual growth of the dominant species expected during a normal year:

Growth curve number: NE6404

Growth curve name: Pine Ridge/Badlands, warm-season dominant, cool-season sub-dominant.

Growth curve description: Warm-season dominant, cool-season sub-dominant.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	8	15	24	23	15	5	5	0	0

Transitions or pathways leading to other plant communities are as follows:

- Prescribed grazing will move this plant community to the *Prairie Sandreed/Needleandthread Plant Community*.
- Continued frequent and severe defoliation, throughout the growing season of the mid-grasses, will move this plant community to the *Annual/Pioneer Perennial Plant Community*.

Annual/Pioneer Perennial Plant Community

This plant community develops under frequent and severe defoliation and/or excessive disturbance. This can result from heavy livestock or wildlife concentration (i.e. water locations, bedding or loafing grounds, feeding areas, etc.) or cropping abandonment (go-back land). The dominant vegetation includes pioneer annual grasses and forbs and early successional biennial and perennial species. Grasses may include blue grama, sand dropseed, sedge, sixweeks fescue, and cheatgrass. The dominant forbs may include green sagewort, western ragweed, annual sunflower, and annual eriogonum. Shrubs that may be present include cactus, small soapweed and sand sagebrush.

This plant community is resistant to change, as long as soil disturbance or severe vegetation defoliation persist, thus holding back secondary plant succession. Soil erosion is potentially high in this plant community. The community also is susceptible to invasion of non-native annual and perennial forbs due to severe soil disturbances and relatively high percent of bare ground. Reduced surface cover, low plant density, low plant vigor and loss of root biomass, all contribute to decreased water infiltration, increased runoff, and accelerated erosion rates. If left without management blowouts may occur.

Significant economic inputs and time would be required to move this plant community toward a higher successional stage and a more productive plant community. Secondary succession is highly variable, depending upon availability and diversity of a viable seed bank of higher successional species within the existing plant community and neighboring plant communities. This plant community can be renovated to improve the production capability, but management changes would be needed to maintain the new plant community.

The following growth curve represents monthly percentages of total annual growth of the dominant species expected during a normal year:

Growth curve number: NE6403

Growth curve name: Pine Ridge/Badlands, cool-season/warm-season co-dominant.

Growth curve description: Cool-season, warm-season co-dominant.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	5	10	20	25	20	10	5	5	0	0

Transitions or pathways leading to other plant communities are as follows:

- Long-term prescribed grazing (including adequate rest periods) may move this plant community through the successional stages leading to the *Sand Bluestem/Prairie Sandreed Plant Community*.

Ecological Site Interpretations

Animal Community – Wildlife Interpretations

-- Under Development --

Sand Bluestem/Prairie Sandreed Plant Community:

Prairie Sandreed/Needleandthread Plant Community:

Needleandthread/Sand Dropseed Plant Community:

Annual/Pioneer Perennial Plant Community:

Animal Preferences (Quarterly – 1,2,3,4[†])

Common Name	Cattle	Sheep	Horses	Deer	Antelope	Bison	Elk
Grasses and Grass-like							
blue grama	U D P U	D P P D	U D P U	D P P D	D P P D	U D P U	U D P U
hairy grama	U D P U	D P P D	U D P U	D P P D	D P P D	U D P U	U D P U
Indian ricegrass	D P U D	N P N D	D P U D	N P N D	N P N D	D P U D	D P U D
little bluestem	U D D U	N D N N	U D D U	N D N N	N D N N	U D D U	U D D U
needleandthread	U D U D	N D N U	U D U D	N D N U	N D N U	U D U D	U D U D
prairie sandreed	U D D U	U D U U	U D D U	U U D U	U U D U	U D D U	U D D U
sand bluestem	U D P D	U D U U	U D P D	U D U U	U D U U	U D P D	U D P D
sand dropseed	N U N N	N U N N	N U N N	N U N N	N U N N	N U N N	N U N N
sand lovegrass	U D D U	N N N N	U D D U	N N N N	N N N N	U D D U	U D D U
sand paspalum	N U U N	N U N N	N U U N	N U N N	N U N N	N U U N	N U U N
Sandhill muhly	N U N N	N N N N	N U N N	N N N N	N N N N	D U U D	N U N N
Scribner panicum	U U D U	N U N N	U U D U	N U N N	N U N N	U U D U	U U D U
sedge	U D U D	U P N D	U D U D	U D U D	U D U D	U D U D	U D U D
switchgrass	U D D U	U D U U	U D D U	N N N N	N N N N	U D D U	U D D U
threeawn	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N
Forbs							
annual sunflower	U U D U	U D U U	U U D U	U D U U	U D U U	U U D U	U D U U
cudweed sagewort	U U U U	U U D U	U U U U	U U D U	U U D U	U U U U	U U D U
cutleaf ironplant	U U U U	N U U N	U U U U	N U U N	N U U N	U U U U	N U U N
false boneset	U U D U	N D U N	U U D U	N D U N	N D U N	U U D U	N D U N
gayfeather	U U D U	U P P U	U U D U	U P P U	U P P U	U U D U	U P P U
goldenrod	U U D U	N U U N	U U D U	N U U N	N U U N	U U D U	N U U N
green sagewort	U U U U	U U U U	U U U U	U U U U	U U U U	U U U U	U U U U
heath aster	U U D U	U U P U	U U D U	U U P U	U U P U	U U D U	U U P U
penstemon	U U U U	U P P U	U U U U	U P P U	U P P U	U U U U	U P P U
scurfpea	U U U U	N U U N	U U U U	N U U N	N U U N	U U U U	N U U N
spiderwort	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	N N N N
tenpetal blazingstar	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	N N N N
thistle	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	N N N N
western ragweed	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	N N N N
Shrubs							
cactus	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N
fringed sagewort	U U U U	U U U U	U U U U	U D D U	U P P D	U U U U	U U U D
leadplant	U P D U	U P D U	U P D U	U P D U	U P D U	U P D U	U P D U
poison ivy	N N N N	U U U U	N N N N	U U U U	U U U U	N N N N	U U U U
rose	U D D U	U D D U	U D D U	U D D U	U D D U	U D D U	U D D U
sand sagebrush	U N N U	U N N U	U N N U	U N N U	U N N U	U N N U	U N N U
sandcherry	U D D U	U D D U	U D D U	U D D U	U D D U	U D D U	U D D U
small soapweed	D N N D	D U U D	D N N D	D U U D	D U U D	D N N D	D U U D

N = not used; **U** = undesirable; **D** = desirable; **P** = preferred; **T** = toxic

[†] Quarters: 1 – Jan., Feb., Mar.; 2 – Apr., May, Jun.; 3 – Jul., Aug., Sep.; 4 – Oct., Nov., Dec.

Animal Community – Grazing Interpretations

The following table lists suggested initial stocking rates for cattle under continuous grazing (year long grazing or growing season long grazing) under normal growing conditions; however, *continuous grazing is not recommended*. These are conservative estimates that should be used only as guidelines in the initial stages of the conservation planning process. Often, the current plant composition does not entirely match any particular plant community (as described in this ecological site description). Because of this, a field visit is recommended, in all cases, to document plant composition and production. More precise carrying capacity estimates should eventually be calculated using the following stocking rate information along with animal preference data, particularly when grazers other than cattle are involved. With consultation of the land manager, more intensive grazing management may result in improved harvest efficiencies and increased carrying capacity.

Plant Community	Production (lbs./acre)	Carrying Capacity* (AUM/acre)
Sand Bluestem/Prairie Sandreed	1900	0.60
Prairie Sandreed/Needleandthread	1400	0.44
Needleandthread/Sand Dropseed	900	0.28
Annual/Pioneer Perennial	500	0.16

* Continuous season-long grazing with proper livestock distribution under average growing conditions. If distribution problems occur, stocking rates must be reduced to maintain plant health and vigor.

Grazing by domestic livestock is one of the major income-producing industries in the area. Rangeland in this area may provide yearlong forage. During the dormant period, the forage for livestock will likely be lacking protein to meet livestock requirements, and added protein will allow ruminants to better utilize the energy stored in grazed plant materials. A forage quality test (either directly or through fecal sampling) should be used to determine the level of supplementation needed.

Hydrology Functions

Water is the principal factor limiting forage production on this site. This site is dominated by soils in hydrologic group A. Infiltration ranges from high to very high. Runoff potential for this site varies from very low to low depending on soil hydrologic group and ground cover. In many cases, areas with greater than 75% ground cover have the greatest potential for high infiltration and lower runoff. An example of an exception would be where short grasses form a strong sod and dominate the site. Areas where ground cover is less than 50% have the greatest potential to have reduced infiltration and higher runoff (refer to Section 4, NRCS National Engineering Handbook for detailed information).

Recreational Uses

This site provides hunting opportunities for upland game species. The wide variety of plants which bloom from spring until fall have an esthetic value that appeals to visitors.

Wood Products

No appreciable wood products are present on the site.

Other Products

Seed harvest of native plant species can provide additional income on this site.

Supporting Information

Associated Sites

(064XY011NE) – Sandy 14-17" P.Z.
(064XY024NE) – Subirrigated

(064XY032NE) – Sandy 17-20" P.Z.

Similar Sites

(064XY011NE & 064XY032NE) – Sandy 14-17" P.Z. & Sandy 17-20" P.Z.
[More prairie sandreed; more level terrain]

Inventory Data References

Information presented here has been derived from NRCS clipping data and other inventory data. Field observations from range-trained personnel was also used. Those involved in developing this site include: Jill Epley, Range Management Specialist, NRCS; Rick Peterson, Range Management Specialist, NRCS; David Steffen, Range Management Specialist, NRCS; Jeff Vander Wilt, Range Management Specialist, NRCS.

<u>Data Source</u>	<u>Number of Records</u>	<u>Sample Period</u>	<u>State</u>	<u>County</u>
SCS-RANGE-417				
Ocular estimates				

State Correlation

This site has been correlated with Nebraska, South Dakota and Wyoming in MLRA 64.

Field Offices/Counties

Alliance, NE	Box Butte	Lusk, WY	Niobrara	Torrington, WY	Goshen
Bridgeport, NE	Morrill	Martin, SD	Bennett/Shannon	Wall, SD	East Pennington
Chadron, NE	Dawes/Sioux	Rapid City, SD	Pennington	Wheatland, WY	Platte
Douglas, WY	Converse	Rushville, NE	Sheridan		
Kadoka, SD	Jackson	Scottsbluff, NE	Scottsbluff		

Relationship to Other Established Classifications

Level IV Ecoregions of the Conterminous United States: 25a – Pine Ridge Escarpment, 43h – White River Badlands, and 43i – Keya Paha Tablelands.

Other References

High Plains Regional Climate Center, University of Nebraska, 830728 Chase Hall, Lincoln, NE 68583-0728. (<http://hpccsun.unl.edu>)

USDA, NRCS. National Water and Climate Center, 101 SW Main, Suite 1600, Portland, OR 97204-3224. (<http://wcc.nrcs.usda.gov>)

USDA, NRCS. National Range and Pasture Handbook, September 1997

USDA, NRCS. National Soil Information System, Information Technology Center, 2150 Centre Avenue, Building A, Fort Collins, CO 80526. (<http://nasis.nrcs.usda.gov>)

USDA, NRCS. 2001. The PLANTS Database, Version 3.1 (<http://plants.usda.gov>). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

USDA, NRCS, Various Published Soil Surveys.

Site Description Approval

_____ State Range Management Specialist	_____ Date	_____ State Range Management Specialist	_____ Date
_____ State Range Management Specialist	_____ Date		